



Dart Aerospace Ltd.
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D206-667-147TRN
Job Sheet 202729



Part No: D206-667-147TRN

Job Qty: 1 pcs

Part Name: Crosstube Assembly, Mid Fwd



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 11/1/19

Job Tracking No:

Due Date: 11/22/19

Created By: Marie Lajeunesse

Type: Stock

Description:

Note: D206-667-147 REV.B IPP rev:A 11.01.06 new issue DD ver:EC

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Lead Time	DAS Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier			
100	Mori Seiki TL-40 - 1	1 pcs	11/22/19	11/22/19	1.00	1.47	Mori Seiki TL-40 - 1			66 2019/11/20 9-89
110	QC 2	1 pcs	11/22/19	11/22/19	0.00	0.00	QC 2 - 1			
							QC 2 - 12			
							QC 2 - 14			
							QC 2 - 17			
							QC 2 - 19			
							QC 2 - 2			
							QC 2 - 20			
							QC 2 - 22			
							QC 2 - 23			
							QC 2 - 25			
							QC 2 - 32			
							QC 2 - 33			
							QC 2 - 35			
							QC 2 - 39			
							QC 2 - 4			
							QC 2 - 40			
							QC 2 - 44			
							QC 2 - 45			
							QC 2 - 48			
							QC 2 - 49			
							QC 2 - 50			
							QC 2 - 51			
							QC 2 - 52			
							QC 2 - 57			
							QC 2 - 62			
							QC 2 - 63			
							QC 2 - 8			
							QC 2 - 66			
							QC 2 - 64			
							QC 2 - 65			

SCRAP

P.T.O.

					QC 2 - 5	
					QC 2 - 71	
					QC 2 - 73	
					QC 2 - 69	
120	Mori Seiki TL-40 - 1 - B4B	1 pcs	11/22/19	1.00 1.47	Mori Seiki TL-40 - 1 - B4B	
130	QC 2	1 pcs	11/22/19	0.00 0.00	QC 2 - 1	
					QC 2 - 12	
					QC 2 - 14	
					QC 2 - 17	
					QC 2 - 19	
					QC 2 - 2	
					QC 2 - 20	
					QC 2 - 22	
					QC 2 - 23	
					QC 2 - 25	
					QC 2 - 32	
					QC 2 - 33	
					QC 2 - 35	
					QC 2 - 39	
					QC 2 - 4	
					QC 2 - 40	
					QC 2 - 44	
					QC 2 - 45	
					QC 2 - 48	
					QC 2 - 49	
					QC 2 - 50	
					QC 2 - 51	
					QC 2 - 52	
					QC 2 - 57	
					QC 2 - 62	
					QC 2 - 63	
					QC 2 - 8	
					QC 2 - 66	
					QC 2 - 64	
					QC 2 - 65	
					QC 2 - 5	
					QC 2 - 71	
					QC 2 - 73	
					QC 2 - 69	
140	QC 8	1 pcs	11/22/19	0.00 0.00	QC 8 - 12	
					QC 8 - 14	
					QC 8 - 17	
					QC 8 - 20	
					QC 8 - 25	
					QC 8 - 3	
					QC 8 - 32	
					QC 8 - 33	
					QC 8 - 35	
					QC 8 - 39	
					QC 8 - 4	
					QC 8 - 44	
					QC 8 - 45	
					QC 8 - 49	
					QC 8 - 58	
					QC 8 - 8	
					QC 8 - 9	
					QC 8 - 68	
					QC 8 - 67	
					QC 8 - 1 (A)	

					QC 8 - 47	
					QC 8 - 40	
					QC 8 - 52	
					QC 8 - 23	
					QC 8 - 57	
					QC 8 - 76	
					QC 8 - 61	
145 Crosstubes - 2 - B4B	1 pcs	11/22/19	0.00 0.25		Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	
					Crosstubes - 3 - B4B	
					Crosstubes - 4 - B4B	
150 Crosstubes - 3 - B4B	1 pcs	11/22/19	0.00 0.13		Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	
					Crosstubes - 3 - B4B	
					Crosstubes - 4 - B4B	
160 QC 7	1 pcs	11/22/19	0.00 0.00		QC 7 - 10	
					QC 7 - 13	
					QC 7 - 14	
					QC 7 - 15	
					QC 7 - 17	
					QC 7 - 18	
					QC 7 - 19	
					QC 7 - 2	
					QC 7 - 28	
					QC 7 - 3	
					QC 7 - 30	
					QC 7 - 34	
					QC 7 - 36	
					QC 7 - 37	
					QC 7 - 41	
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	
					QC 7 - 50	
					QC 7 - 67	
					QC 7 - 40	
					QC 7 - 24	
					QC 7 - 43	
					QC 7 - 61	
					QC 7 - 81	
					QC 7 - 76	
					QC 7 - 79	
170 Packaging 3-1 - Stock - B4B	1 pcs	11/22/19	0.00 0.00		Packaging 3 - 1 - B4B	
					Packaging 3 - 2 - B4B	
					Packaging 3 - 3 - B4B	
					Packaging 3 - 4 - B4B	
					Packaging 3 - 5 - B4B	
					Packaging 3 - 6 - B4B	
					Packaging 3 - 7 - B4B	
					Packaging 3 - 8 - B4B	
					Packaging 3 - 9 - B4B	
					Packaging 3 - 10 - B4B	
					Packaging 3 - 11 - B4B	
					Packaging 3 - 12 - B4B	

Part Op **100** - Mori Seiki TL-40 (Mori Seiki CNC Lathe Large) 1-Fill tube with sand & install plugs 206-147 on both ends as per
Descriptions: Folio FB029 2-Turn first side as per Folio FB029 3-Blend transition lines only with belt sander 60 grit.
110 - (QC2- Inspect parts off machine FAI/FAIB)
120 - Mori Seiki TL-40 (Mori Seiki CNC Lathe Large) 1-Turn second side as per Folio FB029 2-Blend transition lines only
with belt sander 60 grit.
130 - (QC2- Inspect parts off machine FAI/FAIB)
140 - r)) Production .0000 * Attachments 140 QC QC8 (QC8- Inspect parts - second check)
145 - (Crosstubes) GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.
150 - (Crosstubes) 1- handfinish X-TUBE INSIDE AND OUT
160 - (QC7-Inspect Chemical Conversion Coat)
170 - (Identify as per dwg & Stock Location: _____ LOCATION : LG014
180 - (QC21- Final Inspection - Work Order Release)

Part / Item	Component Name	Quantity	Operation	Container
D6002-115	Crosstube Material	1 pcs (1 ea)	100-Mori Seiki TL-40 - 1	FD3961

Operation	Component Part	Required	Inventory	Allocated
100-Mori Seiki TL-40 - 1	D6002-115	1	60	0

Specifications could not be found.



Date: 11/20/19

4

DART AEROSPACE LTD	Work Order:	702728
Description: Crosstube Assembly, Mid Fwd	Part Number:	D206-667-147
Inspection Dwg: D206-667-147 Rev: B		Page 1 of 2

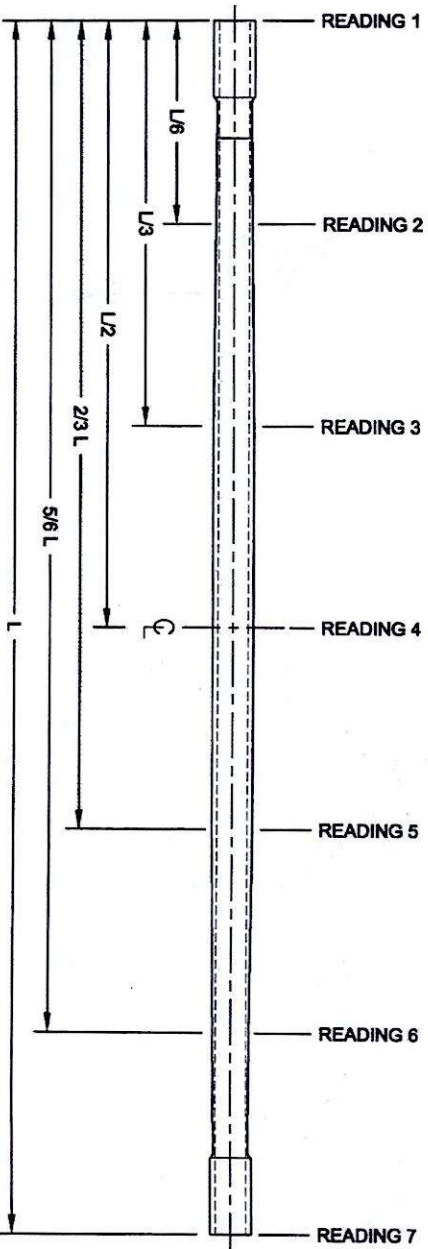
FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.239		✓	CNC-04	
	1.984	+0.005/-0.000	1.987	✓		CNC-08	
	2.019	+0.005/-0.000	2.023	✓		CNC-04	
	2.058	+0.005/-0.000	2.063	✓			
	2.097	+0.005/-0.000	2.102	✓			
	2.136	+0.005/-0.000	2.141	✓			
	2.176	+0.005/-0.000	2.181	✓			
	0.125	+/-0.010	.129	✓		CNC-08	
	R0.063	+/-0.010	.063	✓		RG	
	R2.00	+/-0.010	2.000	✓			
	R0.063	+/-0.010	.063	✓			
	4.438	+/-0.030	4.445	✓		CNC-08	
SIDE B	2.240	+0.005/-0.000					
	1.984	+0.005/-0.000					
	2.019	+0.005/-0.000					
	2.058	+0.005/-0.000					
	2.097	+0.005/-0.000					
	2.136	+0.005/-0.000					
	2.176	+0.005/-0.000					
	0.125	+/-0.010					
	R0.063	+/-0.010					
	R2.00	+/-0.010					
	R0.063	+/-0.010					
	4.438	+/-0.030					
	99.84	+/-0.020	99.85	✓		Tape	

④

DART AEROSPACE LTD		Work Order: <u>200709</u>
Description: Crosstube Assembly, Mid Fwd		Part Number: <u>D206-667-147</u>
Inspection Dwg: D206-667-147 Rev: B		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"						0.035"
READING 2 L= <u>16.64</u>						
READING 3 L= <u>33.28</u>						
READING 4 L= <u>49.92</u>						
READING 5 L= <u>66.56</u>						
READING 6 L= <u>83.2</u>						
READING 7 L= <u>99.84</u>						

Calibration Result

Actual Block Thickness: 100-300
 Sitiescan 250 Measured Thickness: _____

Measured by:		Audited by:		Preliminary Approval:	
Date:		Date:		Date:	
Rev	Date	Change		Revised by	Approved
B	11.06.21	New Issue		KJ	
C	12.06.04	Wall thickness form added		KJ	
D	19.05.01	Drawing Revision Change		<u>Mcma</u>	<u>MA.</u>

Item	Qty -147	Part Number	Description
1	X	D208-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4WB	RIVET (OR NAS9302B-4-8)
9	A/R	PROSEAL	SEALANT, AMS-S-8802 CLASS B-2
10	2	AN742D36	CLAMP
11	2	MS9185-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-06	SCREW
14	4	NAS1149C0332R	WASHER (OR AN980C10L)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 99.84±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D208-667-147" AND BATCH NUMBER ON INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 15.0 lbs (-507 = 12.84)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) TO INSTALL D2891-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING.
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT.
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MEGOHMS.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 202729 ML5
19-11-01

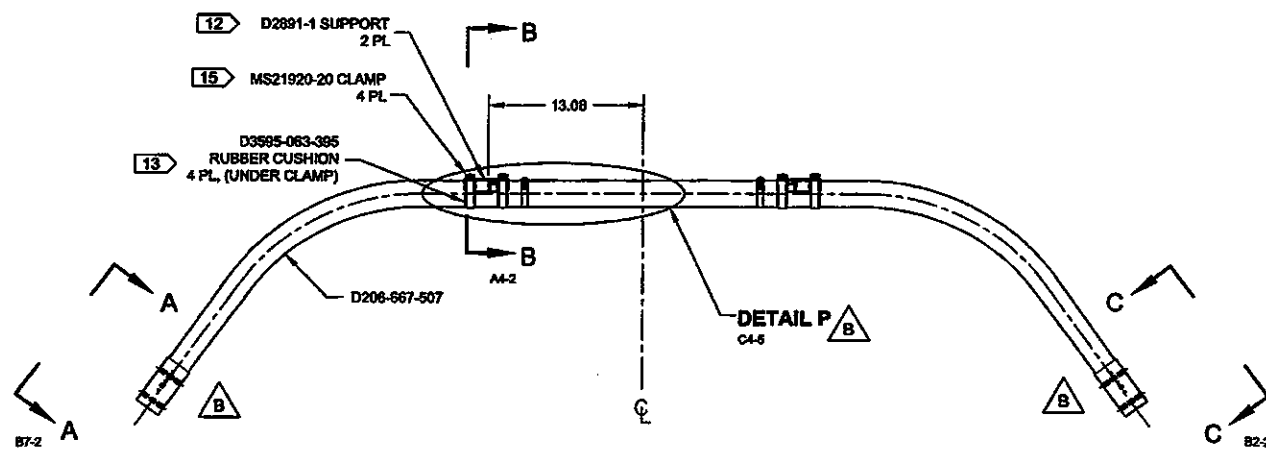
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2018 SEP 06
EN 14-717

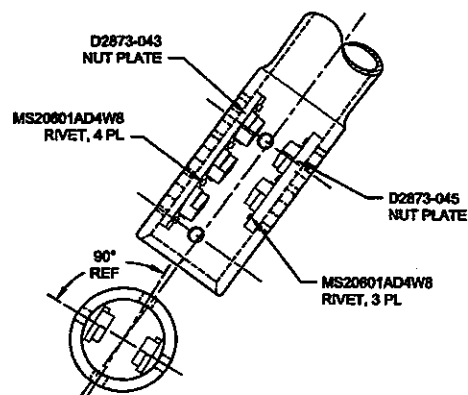
B	REVISE SHEET 2 ASSEMBLY DETAIL HOLE PATTERN PER CAR18-221. UPDATE PARTS LIST AND GENERAL NOTES 12 & 15 TO INCORPORATE DEO A-1. ADD ITEMS 10-14 TO PARTS LIST, ADD GENERAL NOTES 16-18 AND ADD SHEET 5 TO INCORPORATE DEO A-2.	JMH	18.05.01
A	NEW ISSUE	CP	10.11.23
REV.	DESCRIPTION	BY	DATE
DESIGN		JMH	
DRAWN		JMH	
CHECKED	ZE		
MFG. APPR.	AS		
APPROVED	NO		
DE APPR.			
DATE	18.05.01		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D208-667-147	REV. B SHEET 1 OF 5
TITLE CROSSTUBE ASS'Y (206L MID FWD)	SCALE NTS
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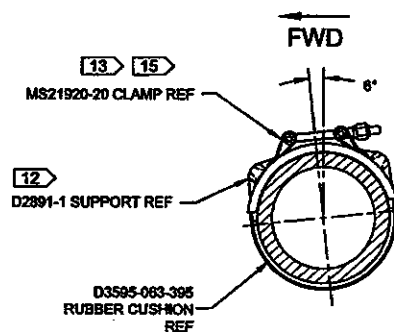
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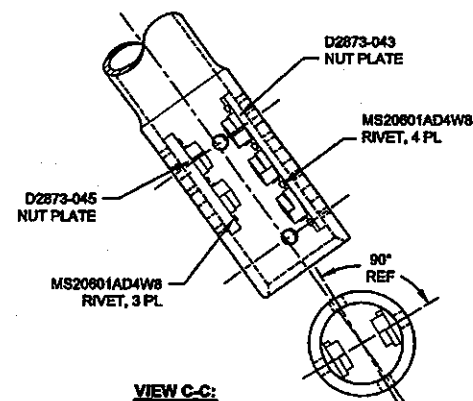
**D206-667-147
ASSEMBLY DETAIL
(VIEW LOOKING FWD)**



**VIEW A-A:
CUFF DETAIL
SCALE 4X**



**SECTION B-B
SCALE 5X**



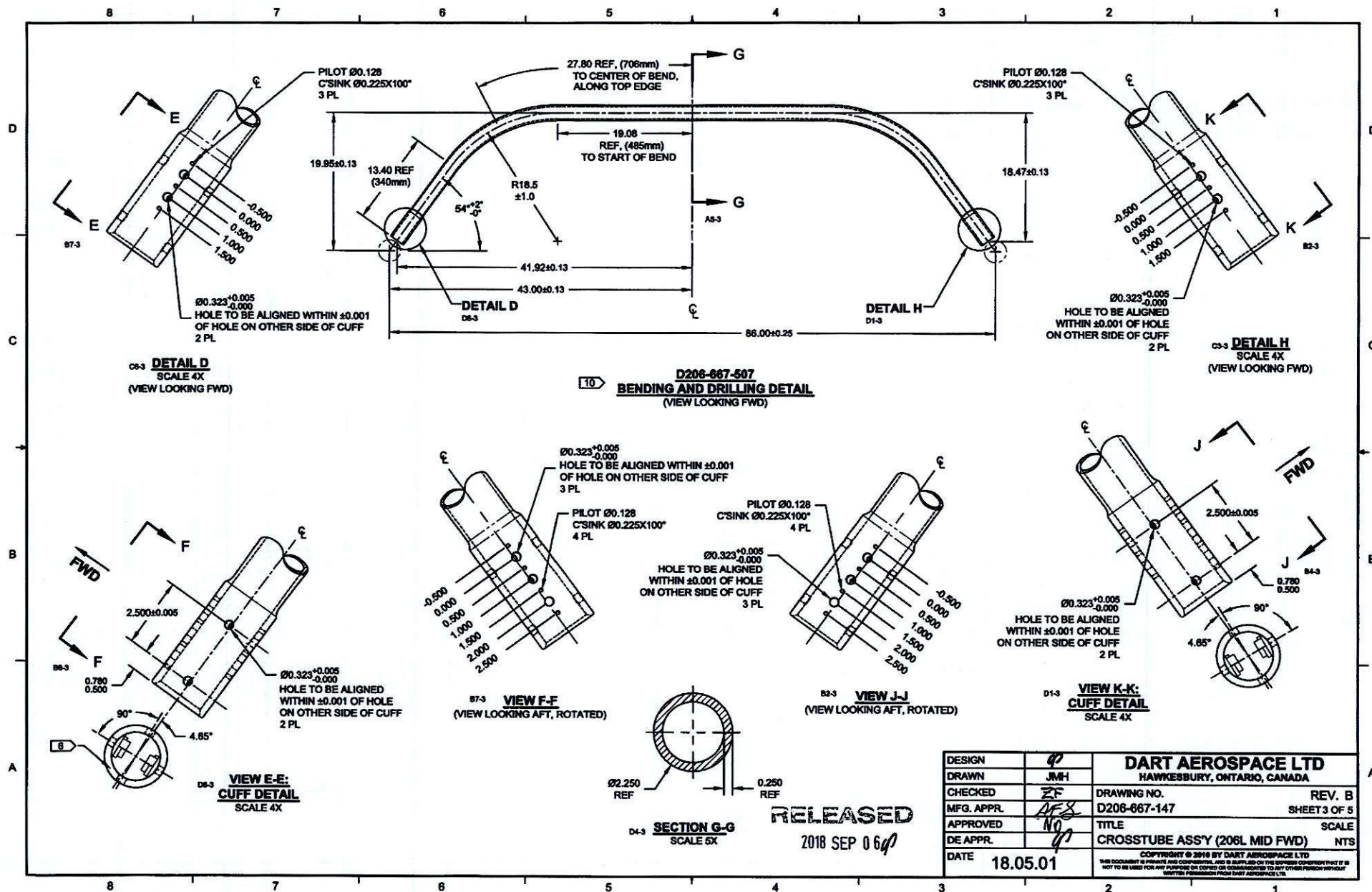
**VIEW C-C:
CUFF DETAIL
SCALE 4X**

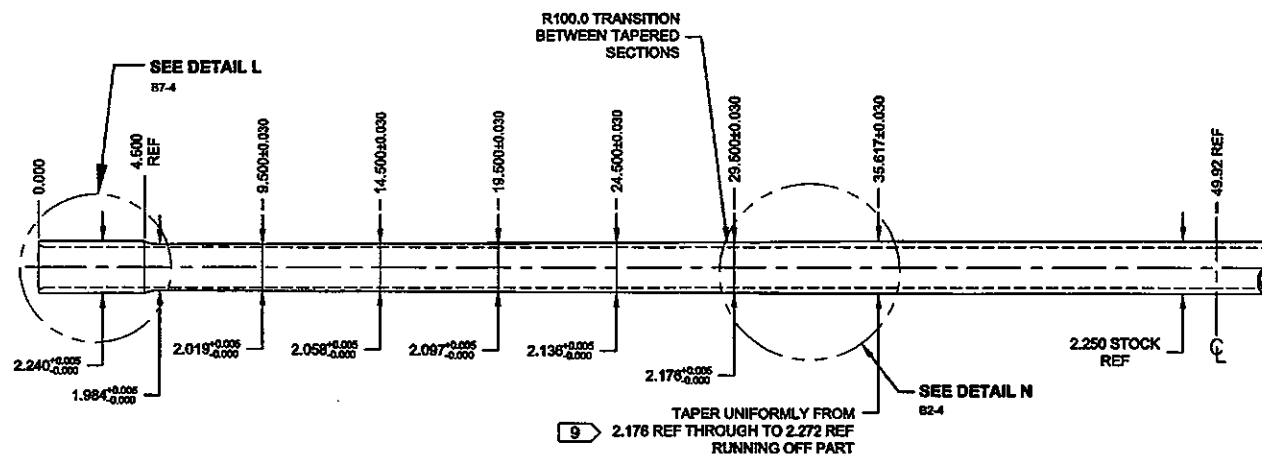
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2018 SEP 06

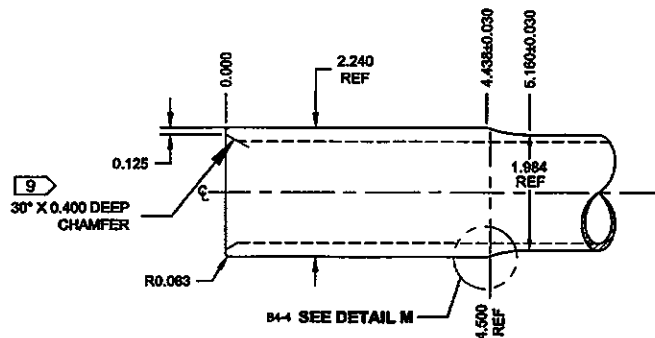
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DRAWN	JMH	HAWKESBURY, ONTARIO, CANADA	
CHECKED	ZF	DRAWING NO.	REV. B
MFG. APPR.	21-3	D206-667-147	SHEET 2 OF 5
APPROVED	NO	TITLE	SCALE
DE APPR.	41	CROSSTUBE ASSY (208L MID FWD)	NTS
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8 7 6 5 4 3 2 1

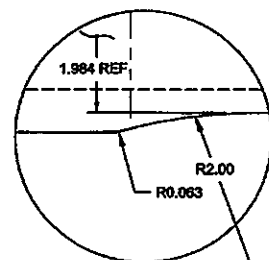




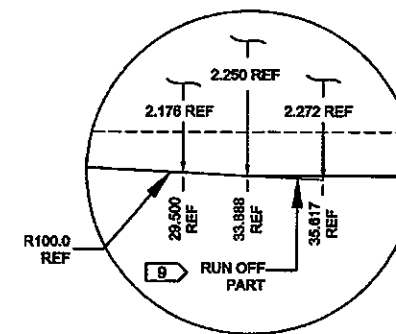
TURNING DETAIL



87-4 **DETAIL L:
CROSSTUBE CUFF**
NOT TO SCALE



88-4 **DETAIL M:
CUFF TRANSITION**
NOT TO SCALE

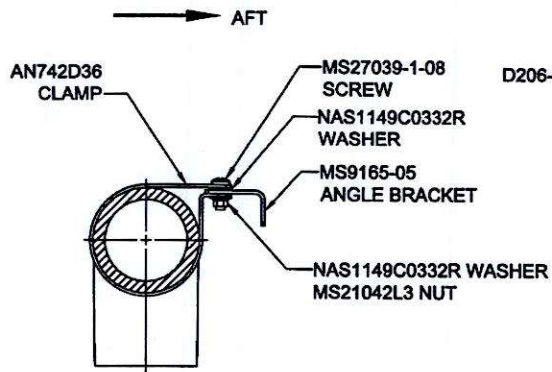


84-4 **DETAIL N:
TAPER RUN-OFF**
NOT TO SCALE

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2018 SEP 06/1

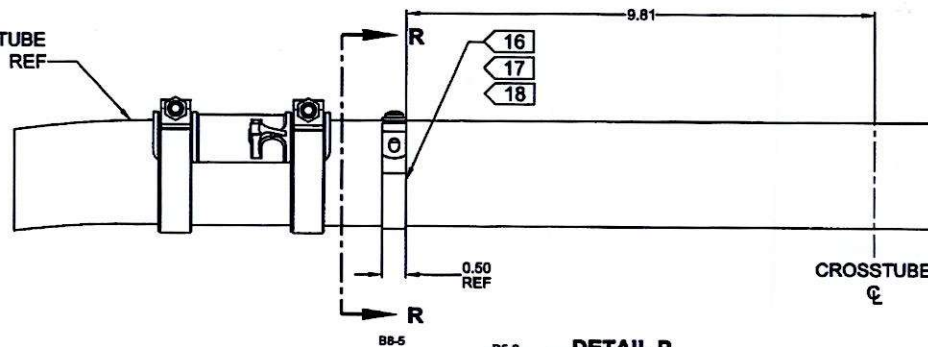
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DRAWN	JMH	HAWKESBURY, ONTARIO, CANADA	
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MFG. APPR.	ZF	D206-687-147	SHEET 4 OF 5
APPROVED	NO	TITLE	SCALE
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C4-5 **SECTION R-R**

△
B

D206-667-507 CROSSTUBE
REF



D5-2 **DETAIL P**
BONDING STRAP INSTALLATION 2 PL

△
B

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2018 SEP 06

DESIGN	92	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	JMH		
CHECKED	ZE	DRAWING NO.	REV. B
MFG. APPR.	AFS	D206-667-147	SHEETS OF 5
APPROVED	NO	TITLE	SCALE
DE APPR.	97	CROSSTUBE ASS'Y (206L MID FWD)	NTS
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Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: <u>202729</u> Part No: <u>0206-667-147 TRN</u>	DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☒ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐		
Date: <u>2019/11/20</u>	Sequence #: <u>120</u>	QTY Affected: <u>1</u>		MRB (QSI042) DAS 9 9-89 <u>19.11.21</u>
Description Work Order Deviation		Disposition		Completed By
<u>Tube slipped out of Jaws</u> <u>cuff suppose to be 4.438"</u> <u>and i get = 4.000"</u>		<u>Scrap destroy</u> <u>no replace.</u>		<u>MD</u> <u>19-11-21</u>
				Lead hand / Supervisor
				<u>TW</u> <u>19-11-20</u>
				QC / QA Coordinator
				DAS 9 9-89 <u>19.11.21</u>
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☒ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread		
		Other/Details:		